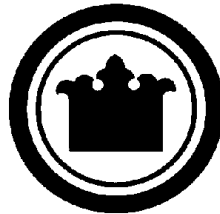


1998

ANNUAL BRIDGE REPORT

of the



Roads Services Division
King County Department of Transportation

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May 1999

COVER: ***Raging River Bridge Replacement***
 Preston Fall City Road, Fall City, WA
 Covington Way Pedestrian Bridge
 Covington Way SE, Covington
 Carnation Farm Road Slough Bridge
 NE Carnation Farm Road, Carnation

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I. INTRODUCTION

This bridge report summarizes the status of King County's roadway bridges and bridge improvement programs for 1998. The Bridges and Structures Unit of the Road Services Division prepares a report annually in compliance with RCW 36-78-070, which requires each County Road Engineer to furnish the legislative authority with a résumé of the findings of bridge inspections for the preceding year.

This report presents a summary of the bridge inspection program, a listing of load-limited bridges, and major maintenance and repair projects. This report also briefly describes the ongoing programs and projects that address deficient conditions on the County's bridges, and the status of the County's major capital bridge projects.

Throughout the report, several references are made to specific bridges, each of which is uniquely identified by name and number. In order to assist the reader, the complete bridge inventory and location descriptions are included as Table 1 in the Appendix.

The last section of the report contains an update and discussion of those bridges with the highest priority for replacement or rehabilitation, the county's bridge seismic retrofit program, and other programs that address specific deficiencies. A tabular listing of the results of the bridge priority needs is included as Table 4 in the Appendix.

II. BRIDGE INSPECTIONS AND FINDINGS

Federal requirements for bridge inspection, documented as the National Bridge Inspection Standards (NBIS), mandate that public agencies inspect and report on all bridges (vehicle-carrying structures with a centerline length of over 20 feet) at least once every two years. The purpose of routine inspections is to document the current condition of the bridge, determine the degree of wear and deterioration, and recommend repairs or needed services. Bridges deficient in either condition or load capacity require more frequent inspection, as do those bridges with timber structural members. Bridges with special features require inspection of those specific features, such as the underwater inspection of submerged structural components.

Inspection results are kept in a database called Washington State Bridge Inventory System (WSBIS) developed by WSDOT and maintained by the Roads Services Division. Periodic updates are sent to the Washington State Department of Transportation (WSDOT) TransAid as they collect and verify compliance with the NBIS and report to Federal Highway Administration (FHWA).

In 1998 all agencies owning bridges in the State of Washington were also required to record bridge condition data in accordance with the Bridge Management System (BMS). Conversion to different recording systems is mandated by the FHWA in an attempt to better quantify deterioration rates of bridge structures and to integrate maintenance programs with major improvements, using the same conditions database. This integrated approach is intended to maximize the benefits under limited budgets. Its primary use is on a statewide level rather than on a local county level. WSDOT has developed a laptop program and the program will be used by the County during the 1999 inspection cycle.

A. INVENTORY CHANGES

The Road Services Division inspects and inventories a total of 210 bridges. Of these, 186 are wholly owned by King County, two of which are Parks Department bridges. Six bridges are jointly owned with incorporated cities. Consistent with RCW 39.34, the Interlocal Cooperation Act, agreements for sharing operational costs and establishing a framework for future improvements are negotiated between the owning agencies. Eighteen bridges are owned by cities that use the engineering services of the County for bridge inspection and maintenance.

In 1998, the ownership of seven bridges was transferred as a result of previous incorporations; five to the City of Kenmore and two to City of Sammamish in 1998.

The following tables summarize all of the changes to the inventory database in 1998 that resulted from bridge projects, incorporations, annexations, and acceptance of bridges built for development.

Major Changes in Inventory			
BRIDGE NAME	NUMBER	ACTION (Added, Revised, Deleted, Transferred)	REASON (Annexation, Incorporation, Accepted, New, Replaced, Eliminated)
Covington (pedestrian)	3085P	Added	New pedestrian bridge
East Kenmore	1071AE	Transferred	City of Kenmore Incorporation
West Kenmore	1071AW	Transferred	City of Kenmore Incorporation
Swamp Creek	264X	Transferred	City of Kenmore Incorporation
Lower Swamp Creek	5015	Transferred	City of Kenmore Incorporation
McDonald Highland (ped)	5045	Transferred	City of Kenmore Incorporation
Inglewood	1011A3	Transferred	City of Sammamish Incorporation
Beaver Lake Trestle	422A	Transferred	City of Sammamish Incorporation
Bear Creek Ranchette	55	Added	Newly found pedestrian bridge
Camp Sambica (ped)	5070	Added	Part of the transfer from SR 901 from State
Soos Creek Bridge	3104	Deleted	Annexed to city of Kent
Soos Creek Bridge	3105	Deleted	Annexed to city of Kent

Bridges Owned Jointly with Cities			
Bridge Name	Number	City-County Agreement	City
York	225C	Done	Redmond
Duvall	1136A	In process	Duvall
Meadowbrook	1726A	In process	Snoqualmie
Lee Hill	3013	In process	Auburn
14th/16th Avenue South	3179	Done	Tukwila
Green River	3216	In process	Kent
Greenwater	3050B	None Required	On border with Pierce County

Inventoried Bridges Owned by Cities/other County agencies		
Bridge Name	Number	Owner City
Salt Water State Park	3139	Des Moines
South Twin Bridge	3143	Des Moines
Hylebos Creek	3005	Federal Way
East Kenmore bridge	1071AE	Kenmore
West Kenmore bridge	1071AW	Kenmore
Swamp creek	264X	Kenmore
Lower Swamp creek	5015	Kenmore
McDonald Highland	5045	Kenmore
Fort Dent Park	6001	King County Parks
Marymoor Park	6002	King County Parks
McAleer Creek	264Z1	Lake Forest Park
McAleer Creek	264Z2	Lake Forest Park
McAleer Creek	264Z3	Lake Forest Park
Hamlin Road	5017	Lake Forest Park
May Creek Trestle	368B	Newcastle
Beaver Lake Trestle	422A	Sammamish
Inglewood Bridge	1011A3	Sammamish
Miller Creek	3145A	Seatac
Richmond Beach Overcrossing	167AOX	Shoreline
Hidden Lake	167C	Shoreline

B. ROUTINE BRIDGE INSPECTIONS

Depending on the age, composition, and condition of the bridge, the bridge engineer determines the inspection frequency: some bridges require more frequent inspections than do others. The National Bridge Inspection Standards (NBIS) allow a maximum interval of two years, with few exceptions. A total of one hundred and twenty four routine bridge inspections were conducted in 1998.

A certified bridge inspector and an assistant must perform bridge inspections. The inspectors make an in-depth evaluation of the condition of the bridge structure and record information about any detectable defects. When the inspection reveals a deficiency, a maintenance work order is generated and assigned a priority. Urgent maintenance to correct urgent structural or safety concerns are promptly addressed. Bridge repairs are discussed further in Section IV.

Most bridges show increasing signs of deterioration as a result of age, increased use, and waterway instability. The inspection and maintenance repair records developed over years of observation enable the engineer to make an assessment of the long-term performance of the structure.

Many King County bridges were constructed during the 1950s. Most of the bridges from that period were built with timber substructures and are reaching the end of their useful life. Timber bridges generally last between 30 and 50 years, depending on environmental conditions and construction details. The life of many of these bridges has been temporarily extended by repair, and replacement of rotted timbers. Eventually, however, they will need replacement.

County bridges built after 1970 are generally in good to excellent condition. These bridges were designed using modern standards for traffic loads and incorporate materials that will result in long structural life.

C. SPECIAL INSPECTIONS

1. UBIT Inspection

An Under-Bridge Inspection Truck (UBIT) must be used to perform an inspection if the underside of the bridge deck is not accessible from a ladder. The UBIT is rented from either the WSDOT or the city of Seattle under contractual arrangements. A total of 41 bridges are identified for UBIT inspections (see Table 2 in the Appendix) and 15 of these bridges were inspected in 1998 and 19 of them are scheduled for 1999.

Inspection Personnel	UBIT Owner	1998	1999
King County	WSDOT	5	3
WSDOT	WSDOT	1	6
King County	City of Seattle	9	10

2. Fracture-Critical Inspection:

Special inspections are required every two years on structures that have fracture-critical members, the failure of which could cause partial or total collapse of the bridge. King County has identified a total of eight bridges in this category. The four fracture-critical bridges that were inspected in 1998 are listed in Table 2 in the Appendix. The newly replaced Raging River Bridge #234A is not fracture critical and has been removed from the last year's list. All of the fracture-critical inspections require the use of a UBIT.

3. Underwater Inspection:

Divers conduct underwater inspections of bridges with members in water too deep to permit visual inspection. Inspection of the underwater elements of a bridge is required at least once every five years in accordance with NBIS. A total of 16 bridges require underwater inspections. The following table lists all of the bridges that require underwater inspections and the date of the most recent inspection:

UNDERWATER INSPECTIONS			
Bridge Name	Number	Date of Underwater Inspection	Underwater Inspectors
Cottage Lake	52B	10/2/96	King County
Issaquah Creek	83B	11/26/97	King County
Novelty Hill	119A	8/30/96	King County
Evans Creek	180A	3/24/95	King County
Lake Dorothy	359B	7/30/94	Consultant
W. Snoqualmie River Rd.	916A	10/2/96	King County
Stossel	1023A	9/11/95	Consultant
East Kenmore	1071AE	6/12/96	King County
West Kenmore	1071AW	6/12/96	King County
Duvall Bridge	1136A	9/11/95	Consultant
Duvall Slough	1136B	9/11/95	Consultant
Tolt Br.	1834A	9/12/95	Consultant
Sikes Lake	2133A	9/12/95	Consultant
Soos Creek	3104	6/12/96	King County
Soos Creek	3109	3/20/95	King County
14th/16th Ave. S	3179	11/97, 8/94, 1986	Consultant

4. Scour Evaluation

In 1988, federal requirements for bridge inspections were updated to include mandatory scour evaluations for all bridges that cross water. The update, which was implemented in response to the 1987 collapse of the Schoharie Bridge in New York, focused national attention on the issue. Scour evaluations examine bridge abutments and piers that may be damaged as a result of water surging around the structure and eroding soils on which the structure is supported.

The implementation of the federally mandated scour evaluation program in the State of Washington required all agencies responsible for bridges to complete scour evaluations by January 1, 1997. The scour evaluation completed by King County included inspection of all bridge abutments and piers in waterways and an analysis of the scour susceptibility of the bridges that cross water. Of King County's bridges, 47 have been determined to be "scour-critical." A scour-critical bridge could potentially experience rapid erosion during flood events, and the foundation of the bridge could be undermined, causing partial or total collapse of the bridge.

D. BRIDGE MONITORING

The Bridge Monitoring Program enables the County's Bridge Engineers to check the status of bridge deficiencies closely until County or contractor resources are available to correct the problems. Carefully monitoring bridge deficiencies minimizes disruption of the road network, saves time and resources by scheduling repairs as conditions warrant, and provides an additional safeguard to the public. Monitoring typically involves measuring various elements of a bridge to determine if cracks, corrosion, settlement, or other movements have worsened. Bridges currently in the monitoring program are:

- ♦ York Bridge 225C – concrete beams cracked
- ♦ 14th/16th Avenue South Bridge 3179 – Bascule piers tilted
- ♦ Northeast 124th St. Bridge 124C – timber caps rotted and crushing
- ♦ Tolt Bridge 1834A – timber caps rotted and crushing
- ♦ Meadowbrook Bridge 1726A – timber caps rotted and crushing
- ♦ Tokul Creek Bridge 61G – concrete beams cracked
- ♦ West Kenmore Bridge 1071AW – concrete beams cracked
- ♦ Elliott Bridge 3166 – timber cap rotted and crushing
- ♦ Hidden Lake Bridge 167C – concrete columns cracked
- ♦ Novelty Bridge 404B – timber caps rotted and crushing
- ♦ Skykomish River Bridge 999Z – concrete endwall cracked
- ♦ Judd Creek Bridge 3184 – concrete box beams cracked
- ♦ South Twin Bridge 3143 (city of Des Moines) – concrete box beams cracked
- ♦ Rutherford Slough 920A – timber piles tilting
- ♦ Wynaco Bridge 3194 – concrete beams cracked
- ♦ Saltwater State Park Bridge 3139 (city of Des Moines) – concrete beams cracked
- ♦ Baring Bridge 509A – timber caps rotted and crushing
- ♦ Various scour critical bridges – piers/abutments eroding under river current

III. LOAD LIMITED BRIDGES AND STATUS SUMMARY

A. POSTED BRIDGES

The 1950s and 1960s saw a boom in bridge construction with little or no regard for maintenance or safety inspection of the structures. The catastrophic failure of Virginia's Silver Bridge in 1967 quickly brought concerns about national bridge inspection standards to the immediate focus of transportation officials. The National Bridge Inspection Standards (NBIS) came to be the national policy for uniform bridge inspection in 1971, a product of the Federal Highway Act of 1968.

A 1988 amendment to the NBIS by the FHWA required that all bridges be load rated and that load-restricted bridges must be posted. This is now included in the minimum inspection requirements set forth in the NBIS (Section 23 CFR, chap. 1 [04/01/90 Edition] 650.301-650.311). The American Association of State Highway and Transportation Officials (AASHTO) determines standard practices for load rating bridges. A bridge load rating is the measure of a bridge's load carrying capacity. There are two capacity levels, the Inventory Rating and the Operating Rating. The Inventory Rating is the load that a bridge can carry for an indefinite number of loading cycles without detriment to the bridge. The Operating Rating is the maximum load that can be carried on an infrequent basis without detriment to the bridge.

Seventeen bridges in the County's inventory carry load restriction postings. The Road Services Division's Six-Year CIP provides for the complete replacement of load-limited bridges and load upgrade projects yearly. Thirteen of these bridges are in the current Six-Year CIP for feasibility studies, environmental review, or scoping.

The Baring Bridge #509A is a unique, one-lane wood suspension bridge, with a posted load limit of 10 Tons. In 1993, King County opted to rebuild the bridge rather than replace it because of the low traffic and community input; therefore, there are no plans to upgrade the bridge in the near future. This bridge is inspected frequently and requires repairs several times each year.

Wagners Bridge #364B was posted with a load limit in 1998 as a result from the new load rating analysis that was necessary when routine inspection revealed a deteriorated condition in the untreated log stringers.

Miller River Bridge #999W will also have a permanent posting because the County decided that the bridge was serving the needs of the community and did not warrant full replacement. The bridge was partially rehabilitated and will retain the posted load limit.

Alvord T Bridge #3130: The County has entered into an agreement with the City of Kent to maintain and operate the bridge in the current condition pending future annexation and until traffic patterns are established following improvements to South 277th Street.

The table on the following page more clearly defines the status of each load-restricted bridge.

LOAD-LIMITED BRIDGES					
	Bridge Name	Number	Avg. Daily Traffic	Planned CIP #	Current Status
1	Tokul Creek	61G	500	200197	Replacement/Rehab. Study began 1997
2	York	225C	3,911	100298	Replacement/Rehab. Study planned 1998
3	Horseshoe Lake	257Z	50	RDCW10	Load upgrade planned 2000
4	Wagners Bridge	364B	50	None	Recommend for Six Year CIP
5	Novelty	404B	7,824	200193	Replacement Construction projected 2000
6	Baring	509A	100	None	Upgraded to 10-Tons in 1995
7	Edgewick	617B	1,370	200498	Replacement Study start in 1999
8	Preston	682A	500	200397	Replacement Study start in 1998
9	Miller River	999W	500	200595	Repair Construction. Completed 1997; no load upgrade
10	Meadowbrook	1726A	2,417	200294	Under consideration for rehab. and conversion to one-lane structure
11	Tolt Bridge	1834A	2,748	200394	Replacement projected in 2001
12	Mount Si	2550A	2,787	200994	Replacement Project start 1999
13	Alvord "T"	3130	1,988	500195	Maintain and Operate per agreement with the City of Kent
14	Cedar Mt. Ramp	3165A	100	400395	Demolition included in Cedar Mt. Bridge (3165) Replacement projected in 2000
15	Elliott	3166	8,901	401288	Replacement Schedule under review
16	Harris Creek	5003	2,073	200200	Replacement Study planned 2000
17	Kelly Rd./Cherry	5008	1,143	200600	Replacement Study planned 2001

B. OVERLOAD PERMITS

The primary function of overload permits is to prohibit unsafe loads on bridges and to reduce long-term damage to the County's bridges caused by overloaded truck traffic. Permits are issued to serve the public's requirement for special transportation needs and to regulate traffic flow around overweight/oversized loads.

Preserving the public's investment and protecting the public's safety are key components in the permitting process. Two uncontrollable factors that affect the structural integrity of the County's bridges are that they were built to lower load capacity design standards than state-owned and the progressive aging process of bridges under high service loads and in a harsh environment.

The possibility of structural damage caused by either single-use high-impact loads, or sustained exposure to repetitive heavy loads, is a prevailing factor when evaluating permit requests. Repetitive loads exceeding the bridge's inventory rating accelerate aging and normal wear of the structure, which increase the need for maintenance and repair. While overloaded truck movements are discouraged, they are sometimes essential for emergency service vehicles and for the transportation of construction-related equipment and manufactured goods.

The county maintains a database of bridge load ratings based on standard truck configurations for each bridge in the inventory. Permit requests are evaluated and compared to the standard truck configuration that most closely resembles the actual truck configuration. If the trucks have a different axle spacing, a separate analysis may be necessary. The permit is granted based on the Operating Rating factor. Occasionally, haulers are required to reduce or separate their loads in order to cross a bridge safely. The permit process is managed through the Property Services Division, and the County Road Engineer's approval has been delegated in order to expedite the process.

There were eighty-seven overload permits and five over width permits processed in 1998. The largest demand for overload permits for 1998 was for extended, or multi-use permits. Multi-use permits on Mt. Si Bridge No. 2550 and Edgewick Bridge No. 617B have been issued to Weyerhaeuser on six-month intervals for logging operations. Each time since 1994, a review of bridge conditions is done prior to re-issuance of a permit for these two bridges.

A special bridge overload permit was issued for Harris Creek Bridge, No. 5008, in mid 1998 to accommodate the construction of the Tolt Treatment Facilities Project for the City of Seattle. The construction for the project will take approximately 18 months. The prime contractor for the project installed temporary shoring on the bridge per plans approved by King County. This bridge is scheduled for replacement study in the six-year CIP program.

IV. MAINTENANCE PROJECTS

Proper maintenance and repairs are necessary to prevent further deterioration of structures, to extend their useful life, and to prevent or reduce major repair costs in the future. The following programs address these needs:

A. COUNTY FORCE MAINTENANCE

Routine and special inspections reveal deficiencies in bridges such as corrosion, damaged guardrail, rotten timbers, deteriorated bridge decks, bank erosion, and cracked concrete. These items are identified by the bridge engineer during an inspection, documented in the report, and repaired via work orders issued for maintenance action by County forces. Work orders can range in priority from "emergency" status, necessitating immediate repair, to "routine" status, indicating that work should be performed within a few years to extend the life of the bridge.

In 1998, 251 new work orders resulted from bridge inspections. During the same period, 193 work orders were completed. The difference between the work orders identified and the work orders completed represents the new backlog of bridge maintenance work. Adding the 1998 backlog to the backlog remaining from previous years, there are a total of 279 bridge repair work orders yet to be completed. Figure 1 in the Appendix shows the escalating trend of the bridge work-order backlog. In general terms, increased traffic, heavier trucks, shorthanded bridge maintenance crews, greater environmental restrictions, and an ever-aging bridge inventory all contributed to this backlog predicament.

Recent trends show that the gap between work accomplished and generation of new work orders is accelerating; however, there is currently no added crew capacity to reduce the backlog. As older bridges are replaced, reductions in the numbers of work orders generated will likely occur. Meanwhile, the trend of an increasing backlog of bridge work continues to be of concern, especially since much of the work is over or near water, necessitating that work be done during the summer fish windows only.

B. TIMBER BRIDGE REPAIRS

In 1994, detailed inspections of the County's 104 bridges with timber members revealed that 70 bridges had timber deficiencies. Between 1995 and 1997, 50 bridges with the worst timber deficiencies were repaired under the \$1.5 million Timber Bridge Repair Program. The Special Operations Unit of the Road Services Division's Maintenance Section performed repairs, which typically included replacing the severely rotted caps or piles of the bridge substructure. The piles and caps are critical members that support the driving deck of the bridge.

It was originally intended that the timber members on the remaining bridges—which are showing early and intermediate signs of decay— would be fumigated to slow the rate of deterioration until the bridges could be extensively rehabilitated or replaced. Environmental regulations would not, however, permit the use of fumigants near waterways, so the remaining bridges will now be monitored until 2001 when \$1.5 million is budgeted to repair another round of rotted timbers. Repairs that cannot wait until 2001 will be repaired as part of the normal bridge maintenance and repair program.

Considering that most of the 104 timber bridges are over 45 years old, and that the normal life span of treated timber is 40 to 50 years, we can expect more problems with these timber members in the future. Although the timber members in these bridges will continue to rot over time, the extensive repairs made during both of these Timber Bridge Repair Programs will significantly extend the life of the County's timber bridges.

C. EMERGENCY REPAIRS

In 1998, bridge engineers were called out three times to address emergency issues on the 14th/16th Avenue South Bridge, a Bascule-type bridge over the Duwamish River near Boeing Field. The bridge was closed for 16 hours in mid-March due to problems with the aging electrical control system. The two other incidents involved mechanical problems with the traffic gates, but a bridge closure was not required during the repair.

The only other significant emergency repair occurred on Elliott Bridge over the Cedar River. The metal decking underneath the asphalt roadway had rusted through, and a large hole was developing on the bridge deck. The bridge was closed for a weekend in mid-December while King County maintenance crews made the repair.

D. BRIDGE PRIORITY MAINTENANCE

CIP-funded construction contracts under the Bridge Priority Maintenance program help reduce the backlog of bridge maintenance needs. This program partially or fully funds major maintenance work performed by in-house bridge maintenance crews and those jobs that are beyond the resource capabilities of the in-house bridge maintenance crews.

Expansion Joint Repairs: King County crews continued with a program began in December of 1997 to repair failed expansion joints. Expansion joints are the breaks in the bridge deck that allow the bridge deck to expand and contract with temperature changes without cracking. Flexible material within the joint is designed to keep the water and debris from falling onto other bridge structures, but this material often fails. The repairs under this program involved removing the old joint material and replacing it with a more durable material.

During the year repairs were completed at the expansion joints of the Raging River Bridge 1008G, the Kanaskat Overcrossing 3037OX, Landsburg Bridge 3075 and Welcome Lake Bridge 63B. These repairs will eliminate emergency joint repairs, prolong the life of the bridge, and provide a smoother riding surface.

Bridge Redeck Program: Two bridges were re-decked in 1998. At Cherry Creek Bridge 427I, the cracked and delaminated concrete bridge deck was partially removed and replaced with a new water-impervious deck. This new deck will considerably slow the corrosion rate of reinforcing steel in the concrete bridge members.

Ames Lake Trestle Bridge 1320A was re-decked because it had extensive cracking and delaminations in the asphalt surfacing over the timber deck. The deck condition, besides being a hazard to motorists, was exposing the timber bridge to water which was promoting rotting. The re-deck method at Ames Lake was to remove the asphalt, install a plywood layer over the existing timber planks, then re-install asphalt. The plywood was installed in order to reduce the number of seams through which water could penetrate to the timber planks.

On a programmatic level, many of the County's bridges are beginning to show signs of distress with age. These signs typically appear as cracks, settlement, or spalling concrete. In an effort to begin evaluation of these problems, King County participated in a program conducted by WSDOT and funded in part by a federal grant. Under the two-year program, 36 bridges with concrete decks were tested for chlorides content, delaminations, and rebar cover. The test results received in 1996 provided bridge engineers with useful information required for prioritizing re-decking projects. Once the nature and extent of the problems are understood, the priority level for repair or replacement of the bridge deck can be set.

E. 14th/16th AVENUE SOUTH BRIDGE REPAIRS

The 14th/16th Avenue South Bridge is a Scherzer Rolling Lift double leaf Bascule bridge that spans the Duwamish River near Boeing Field. Since 1989, King County has jointly owned the bridge with the City of Tukwila and all operation and maintenance costs are split evenly between the two agencies. Increased maintenance efforts since 1995 have improved the concrete approach substructures, the deck, and the electrical and mechanical systems of the moveable spans.

Since most major operational problems are due to the aging electrical system, a preventative maintenance program was started in 1998 to improve the reliability of the bridge. An in-depth inspection and cleaning was done jointly by the City of Seattle and the King County electricians, and will be repeated on an annual basis. As a result, there have been no emergency closures due to electrical system failure since the preventative maintenance program was started, but there are still more improvements to be made. Other major repair projects in 1998 are listed below. Maintenance expenditures in 1998 were \$285,000.

- a. Installation of new covers over rack and pinion gears.
- b. Clean and repaint interior of motor rooms.
- c. Install closed circuit TV camera to monitor boat traffic.
- d. Reactivation of foundation monitoring system on Bascule piers.
- e. Repair of corroded power conduits on bottom level of north tower.

V. BRIDGE PROGRAM SUMMARIES

A. BRIDGE NEEDS REPORT

The King County priority process for bridge replacement projects uses criteria approved by the council to score and rank individual projects. The results are used to help plan and program projects in the Roads CIP that address the County's bridge needs. The bridges with the highest priority for replacement or rehabilitation are listed in Table 4 in the Appendix. The "start year" in the table shows when the project was or will first be funded in the Road Services Division's Six-Year CIP.

The current Roads CIP addresses the highest priority bridge replacement needs with only minor exceptions, as discussed later. The County's oldest steel truss bridges, which were built around 1920, continue to be the predominant bridge type in need of replacement, a fact unchanged.

As scheduled, two bridges have dropped from the top priority list as a result of replacement projects. They are listed below, with the improvements made to each bridge:

Bridge Name	Number	Improvements	Rank Shift	
			From	To
Raging River Bridge	234A	Replacement bridge open to traffic	8th	205th
Carnation Farm Road	5028	Bridge Replaced	14th	196th

Through inspection findings two bridges were found to have decay in structural members, which has moved them into the top of the replacement priority list. Wagners Bridge 364B is a log stringer bridge north of North Bend. The untreated logs that span the north fork of the Snoqualmie River have moderate rot that reduce the load bearing capacity of the bridge that is now posted for reduced loads. Berrydale Overcrossing 3086OX is a timber bridge across the BNSF tracks on Kent-Black Diamond Road. Interim repairs were made in 1998 to shore up the decaying timber support structure. Both bridges are recommended for programming into the Roads CIP as bridge replacement projects.

Among the bridges with high priority for replacement are the Meadowbrook Bridge, the Alvord "T" Bridge, and the Miller River Bridge. All three of these bridges will remain in service and will not be considered for replacement for several years.

- ♦ The Meadowbrook Bridge is a historically significant bridge built in 1921 across the Snoqualmie River at the Snoqualmie city limits. The bridge provides an important local access for the communities that have developed near the city. The current proposal would rehabilitate the bridge as a one lane, signal controlled, roadway. The full replacement of the bridge was not really feasible due to cost and environmental impacts. Also, the current and projected traffic volumes did not justify a new bridge. The rehabilitated bridge will serve the needs of the area through the planning period of roughly 20 years.

- ♦ The Alvord “T” Bridge will be maintained and operated for a period of five years per agreement with the city of Kent. The County performed an analysis that indicated that the bridge could be permanently closed, but it borders the city of Kent and is in the city’s potential annexation area. Kent preferred to postpone the decision to close the bridge until after traffic patterns are established for recent development and roadway work in the area. If the bridge is not annexed to the city within the agreed time, the county will reassess the need to keep the bridge open.
- ♦ The Miller River Bridge near Skykomish was repaired and painted in 1997. The riverbanks were also armored with rock to repair storm damage and prevent further erosion. Although it is narrow, the steel truss is in good condition and serves the needs of the area. It does not currently warrant replacement and is not eligible for a replacement grant for 15 years, as a provision of the federal grant that funded the painting project.

In a few instances the bridge replacement program is not directly addressing the highest priority bridge needs.

- ♦ The 14th/16th Avenue South Bridge consistently ranks in the top ten county bridges in need of replacement. There is an active multi-year repair project, funded in the Roads CIP, to extend the useful life of the structure. However, the funding level of the maintenance project is insufficient to address major deficiencies.

Efforts are underway to work out a replacement bridge funding strategy with Seattle and Tukwila. Meanwhile, the county has initiated a review of the required elements for the Environmental Impact Statement for the bridge replacement project

The replacement bridge cost is now estimated at over \$30 million, which is beyond the realistic funding level of traditional grant-funding sources, since those funds are distributed equitably statewide. The replacement bridge project has regional significance and needs support and involvement from elected officials in order to be successful.

- ♦ The Baring Bridge is a unique, one-lane suspension bridge, with a posted limit of ten tons. In 1993, King County opted to rebuild the bridge rather than replace it; therefore, though it still ranks high in the priority system, there are no plans to upgrade the bridge in the near future. The bridge requires frequent inspection and maintenance.
- ♦ The Horseshoe Lake Creek Bridge has a high priority score primarily because it has a posted load limit. It is at the end of a side road serving one property and is not heavily traveled. The cost of replacement is probably not justified, but that option will be examined when the bridge is scheduled for seismic retrofit and load upgrade analysis in 2000.
- ♦ A report was completed in 1998 for the Tokul Creek Park Bridge that examined the deficiencies of the bridge and potential corrective measures. The bridge has a posted load limit and is consequently high on the priority list for replacement. The report concluded that the most feasible alternative is to strengthen the existing bridge by adding reinforcing steel. The bridge would then continue to provide sole access to several homes and to the electrical generating station at Snoqualmie Falls.

B. BRIDGE SEISMIC RETROFIT PROGRAM

During 1998 the seismic retrofit program remained on track with the original plan. Through the first four years, the program has completed 43 of the 123 bridges scheduled for seismic resistance upgrade and has expended approximately \$7.0 million of the estimated \$20 million proposed for completing the design and retrofit construction for all seismically deficient bridges owned by the county. In 1998, the engineering staff completed retrofit construction on 12 bridges and completed various stages of design for additional 11 bridges. Table 5 in the appendix summarizes the detailed status of the program.

There were several unique approaches used in some of the bridges retrofitted in 1998. The retrofit methods for the Brissack Bridge involved a system that consisted of transverse and longitudinal restrainers, concrete strut beams, high strength bars, and deadman anchors in the bridge approach fill. This system utilizes the resistance from the soils that are immediately available from the roadway approach embankment and has become a common approach for the bridges that are vulnerable along the traffic direction. This approach avoids the need for bridge pier construction in the waterway and allays the concern for the long process of obtaining the necessary construction permits.

The retrofit methods of the Cherry Creek and Cherry Valley Trestle bridges required alternative techniques because the existing slender columns were weak in their ability to resist lateral loads from all directions. The strategy for retrofitting these two bridges was to limit movement in all directions in order to avoid damage to the columns and to prevent unseating at the supports.

At the Cherry Valley Trestle bridge, the existing continuous bridge deck was the ideal feature for distributing loads through beam action along its plane, transmitting seismic loads to new large diameter drilled shafts at each end of the bridge. The constructed retrofit is effective in limiting movement in all directions, essential to protect the many tall and slender support columns.

The primary retrofit elements used for the Cherry Creek Bridge are shear keys. The bridge also needed improvements at the existing precast girders and slab because each existing span was simply supported at each pier, lacking the continuity that is necessary for a beam behavior. To ensure a load path along the bridge span, four longitudinal tie rods and four extra strong pipes were installed at the bottom of the Cherry Creek Bridge deck and the diaphragms. The tie rods and strong restrainer pipes were installed across the existing expansion joints to prevent separation during an earthquake.

14th/16th Avenue South Bridge

The 14th/16th Avenue South Bridge, owned jointly by the county and the city of Tukwila, has a high priority for seismic retrofit and is not scheduled for replacement within ten years. In 1998 the county took action on both the replacement plan and on addressing the retrofit needs. The bridge crosses the Duwamish Waterway and is located between 14th Avenue South and 16th Avenue South, serving the South Park area. The bridge was constructed in 1931 and has four traffic lanes with an overall length of 1,285 feet. The structure consists of a Scherzer rolling-lift, double-leaf, Bascule movable main span, two deck-truss approach spans and twelve concrete slab approach spans. This bridge was excluded from the seismic vulnerability study in 1992 because it was planned for replacement.

However, the schedule for replacement or major rehabilitation of this bridge is still unclear because of the high cost and the involvement of several jurisdictions. Therefore, the seismic vulnerability of the existing structure and the degree of risk to the public were examined by an expert consultant. The preliminary assessment report was completed in 1998 and concluded that this 68-year old bridge is highly vulnerable to a major earthquake event. The specific vulnerabilities cited were; lack of adequate longitudinal and transverse lateral connections, marginal load bearing capacity and high soil liquefaction potential at Bascule span pier timber piles, insufficient reinforcement at concrete columns, and inadequate bearing seat width at the approach concrete spans.

In the event of a major earthquake, these deficiencies pose a risk to traffic on or approaching the bridge and to any employees or equipment in the storage area owned by the Boeing Company, directly underneath the north end of the bridge. The report also cited estimated costs to retrofit the bridge including design and construction at around \$3.0 million for a Level I, \$4.0 million for Level II, and \$ 6.4 million for Level III.

The county effort is aimed toward strengthening the most vulnerable elements of the bridge, and through the board that governs operations, requested that the city of Tukwila contribute funds for a Level I retrofit. A bridge retrofitted to Level I would avoid catastrophic failure, but would likely be left with substantial damage, potentially useless. A Level I retrofit deviates from the overall Level II goal, directed by the county council in 1994, however, it addresses fundamental public safety and acknowledges the economic issues of replacing the bridge.

The engineering staff has proposed a plan that includes a three-phase effort. The initial phase involves detailed structural analysis based on a simulated design earthquake. The analysis will predict the bridge failure modes, and identify structural elements that are inadequate to resist seismic forces. The initial effort will also include the methods of increasing the seismic resistance to the vulnerable structural elements and a report. The report will summarize the analysis, discuss alternative retrofit approaches, and identify the expected cost.

The second phase would then require the county and the city of Tukwila to review the findings and evaluate all related aspects. These aspects include the bridge replacement schedule, the costs and the potential funding sources for retrofit investment, the risk of bridge collapse, and the hazard to human life. The county and the city will need to decide between retrofitting or accepting the risk.

Adjustments to the overall seismic retrofit program schedule will be made in 1999 to accommodate the added analysis work. Additional adjustments will be made in response to the 21% cut to the countywide program budget and in response to the new species listed under the Endangered Species Act. The number of bridges that have been scheduled for design and construction may need to be reduced in the next six years to meet the budget. These bridges will be rescheduled for retrofit after the year 2004 if funds are available at that time.

C. BRIDGE CIP PROJECT STATUS

During 1998, there were 22 active individual bridge CIP projects, excluding small bridge seismic retrofits, major repairs, and other bridge work accomplished under countywide programs. The CIP projects range in scope from preliminary studies to final design and construction of new bridges or improvements. Although it is beyond the scope of this report to provide a synopsis of every project, some specific projects are noted below.

- ♦ The Raging River Bridge #234A replacement project was constructed in 1998 and the roadway reopened to traffic. Final paving, removal of the temporary bypass bridge, and landscaping of the site will be done in early 1999. The new bridge features full width lanes and shoulders plus a sidewalk on the west side of the bridge.
- ♦ The new Smith-Parker Bridge was opened to traffic in April 1998. The bridge, which is just off Preston Fall City Road Southeast on 328th Way Southeast, is a steel truss bridge, similar to the old bridge. The truss bridge met the area constraints and maintained the rural character of the area. The new bridge meets current load, height, and width standards.
- ♦ The Carnation Farm Road Bridge #5028 replacement was constructed in 1998 and the road reopened with no load restrictions. This bridge project completes the series of three bridge projects that secure a vital crossing of the Snoqualmie River Valley against flood and earthquake damage.
- ♦ The Elliott Bridge replacement was advertised for construction in 1998 but no contract was executed. An appeal to the Shoreline Substantial Development Permit was filed, and upon King County's review, some deficiencies were found in the project's environmental review. Subsequently, the County withdrew the permits and, at the request of FHWA, embarked on a supplement to the NEPA Environmental Impact Statement (EIS). This review will address the deficiencies raised during the appeal and update the information in the original EIS, some of which was over ten years old. After the supplemental EIS is issued, the project will be rescheduled for construction.
- ♦ The final design for the Novelty Bridge replacement project was essentially completed during 1998. The project is scheduled for advertisement in 1999 to allow time for bridge fabrication and construction in 2000. Construction of the new bridge will require NE 124th Street to be closed across the valley for eight months. The remaining actions in preparation for advertising include securing property for mitigation sites, complete the Biological Assessment consultation process with National Marine Fisheries Service, complete the historical documentation of the bridge, and market the historic bridge. In addition, three intersection improvements projects are necessary for the bridge closure detour route to function properly. Final design and construction of those improvements is scheduled before NE 124th is closed.

- ♦ The county initiated a consultant study of the environmental process and documentation requirements for a project to replace or rehabilitate the 14th/16th Avenue South Bridge. The study is the initial step in beginning the environmental review process that is required before the bridge can be replaced. The resulting Final Environmental Impact Statement will define the scope of the project and set forth the mitigation measures for impacts to the environment caused by the proposed project.

The implementation of bridge construction projects under federal, state, and local environmental and land use regulations grows increasingly complex. The timelines for environmental review and special studies associated with bridge projects are lengthy, adding one to two years to the preliminary design phase of a major project. Additional constraints and delays to projects are anticipated from the listing of Puget Sound Chinook salmon as a “threatened species” under the Endangered Species Act (ESA). The full impact in both time and expense to the county’s bridge programs will be realized over time and through several projects, and after the process for individual project review is better defined.

The current practice of the regulatory agencies is to issue permits only after the project is completely designed and approved by the federal agencies. This process adds a substantial level of uncertainty to the construction schedule should the permits be appealed, or if a redesign of the project is ordered by NMFS. The Elliott Bridge replacement project is an example of cumulative impacts from a Shorelines permit appeal and regulatory through the life of the project.

The status of active bridge projects is listed in Table 4 (replacement) and Table 5 (seismic retrofit), both in the Appendix. More detailed information is available for each project by contacting the appropriate project manager, or the County Road Engineer. The King County Roads CIP web site (www.metrokc.gov/cip/rcipform.htm) has information on all bridge projects.

D. BRIDGE PAINTING

King County owns a total of twenty-six steel bridges that are painted according to the schedule established in 1993. Bridge painting is restricted to summer months because of weather and permit conditions and is done for preservation not aesthetics.

Table 6 in the Appendix lists the painting schedule for all of the steel bridges. Six of these bridges are major CIP candidates and painting is not considered as a separate project. The Raging River Bridge #234A has been replaced with a concrete girder bridge and no longer requires painting.

APPENDIX

TO

1998 ANNUAL BRIDGE REPORT

TABLE 1 - BRIDGE INVENTORY

			1998 Thomas page no.	Width	Length	Yr Built	Yr Rebt	Facilities Carried	Location	Features Intersected	Jurisdiction
1	52B	COTTAGE LK CR	507	22.8	20	1951		NE 165TH ST	1/2 MI W OF AVONDAL	COTTAGE LK CR	
2	52C	BEAR CREEK	507	66	123	1995		AVONDALE ROAD	3.0 N REDMOND	BEARE CREEK	
3	52D	BEAR CREEK	507	26	45	1950		AVONDALE PL. NE	.3 N OF NE 116TH ST	BEAR CREEK	
4	52E	BEAR CREEK BRIDGE	507	66	67	1995		AVONDALE ROAD	.5 MI N OF NE 116TH	BEAR CREEK	
5	52F	COTTAGE LAKE CREEK	507	40	21	1987		NE 159TH ST.	.1 W OF AVONDALE RD	COTTAGE LAKE CREEK	
7	52H	COTTAGE LAKE CREEK	507	66	48	1994		AVONDALE ROAD NE	315' S OF NE 132ND	COTTAGE LAKE CREEK	
6	55	BEAR CREEK RANCHETTE	507	6	52	1971	1993	FOOT BRIDGE	.6 MI N OF REDMOND	COTTAGE LAKE CREEK	
8	61B	FISH HATCHERY	600	22.8	20	1950		SE FISH HATCHERY R	.8 MI SW OF HW-202	DRAINAGE DITCH	
9	61G	TOKUL CR PARK	600	22	85	1950		FISH HATCHERY RD	.8 MI S OF HW-202	TOKUL CREEK	
10	63	WELCOME LAKE BRIDGE	508	28.7	32	1984		218TH AVE NE	1 MI EA OF AVONDALE	COLIN CREEK	
11	72A	MAY CREEK	627	22.8	16	1951		148TH AVE SE	.8 MI N OF HW-900	MAY CREEK	
12	83B	ISSAQUAH CREEK	658	22.8	40	1952		SE 156TH ST	04.8 S ISSAQUAH	ISSAQUAH CREEK	
13	83D	ISSAQUAH CREEK	658	26	42	1962		CEDAR GROVE RD	.05 MI N OF SE156TH	ISSAQUAH CREEK	
14	99L	KIMBALL CR	630	10	45	1960	1973	SE 76TH ST	.5 MI W OF HW-202	KIMBALL CREEK	
15	111G	PHILLIPS ROAD	597	26.8	16	1964		164TH PL SE	.4 W OF LKSAMM SE	SQUIB CREEK	
16	119A	NOVELTY HILL	537	35	32	1974		NOVELTY HILL RD	.25 NE OF AVONDALE	BEAR CREEK	
17	122I	NORTH FORK	630	22	252	1951		428TH AVE SE	.1 MI S SE REINIG	N FK SNOQUALMIE R	
18	122K	NORMAN BRIDGE	630	30	390	1984		428 AVE. SE N BEND	.6 MI S OF S REINIG	MIDDLE FK. SNOQUALMIE R.	
19	122N	TATE CREEK	630	22.8	16	1952		SE 73RD ST	N. FORK ROAD SE	TATE CREEK	
20	124B	124TH ST BRIDGE	506	38.8	16	1966		NE 124TH ST	.8 MI E OF 132NDPL	DRAINAGE DITCH	
21	124C	NE 124 ST	507	28	114	1963		NE 124 TH ST	.5 MI W WOOD-RED RD	SAMMAMISH RIVER	
22	167AOX	RICHMOND BEACH OXING	474	24	103	1923	1956	27TH AVE NW	.5 W OF 20TH AVE NE	BURLINGTON NORTHERN RR	Shoreline
23	167C	HIDDEN LAKE	474	20	312	1931		10TH AVENUE NW	NW INNIS ARDEN WAY	SIDE HILL RAVINE	Shoreline
24	180A	EVANS CREEK	537	20	23	1917	1953	NE 150TH ST	.1 MI SW OF HW-202	EVANS CREEK	
25	180L	PATTERSON CREEK	598	22.8	16	1951		SE 28TH ST	.2 MI S OF HW-202	PATTERSON CREEK	
26	186J	FIRE STATION	629	26	16	1915		PRESTON FALL CITY	.5 MI SE OF I-90	UNIMPROVED UNDERCROSSING	
27	225C	YORK BRIDGE	507	24	117	1950	1963	NE 116TH ST	.5 MI W OF HW-202	SAMMAMISH RIVER	1/2 City of Redmond
28	228A	W SNOQUALMIE ROAD	569	26	36	1965		NE 18TH ST	W SNOQ. R RD NE	DRAINAGE DITCH	
29	228D	WEST SNOQUALMIE ROAD	569	22.8	16	1950		SNOQUALMIE RIVER R	2 MI S TOLT HILL RD	DRAINAGE DITCH	
30	228E	PATTERSON CREEK	599	26	50	1969		SNOQUALMIE RIVER R	.4 MI N OF SE 24TH	PATTERSON CREEK	
31	228F	312 AVE SE	599	22.8	20	1924	1950	SNOQUALMIE RIV RD	.25 MI N OF SE 24TH	DRAINAGE DITCH	
32	234A	RAGING RIVER	599	50.5	199	1998		PRESTON-FALL CITY	.25 MI S OF HI-202	RAGING RIVER	
33	240A	COTTAGE LAKE CR	507	22.8	18	1951		BEAR CK ROAD	.1 MI E AVONDALE RD	COTTAGE LAKE CREEK	
34	249A	C.W. NEAL ROAD	599	22.8	16	1951		C.W. NEAL ROAD	FALL CITY-CARN. RD	DRAINAGE DITCH	
35	249B	C.W. NEAL ROAD	599	22.8	16	1951		C.W. NEAL ROAD	1.5 MI S OF HW-203	DRAINAGE DITCH	
36	249C	C.W. NEAL ROAD	599	22.8	20	1951		C.W. NEAL ROAD	.3 MI S OF HW-203	DRAINAGE DITCH	
37	257Z	HORSESHOE LAKE CREEK	539	16.8	18	1930	1969	310TH AVE NE	.2 N OF CARN. FARM	HORSESHOE LAKE CREEK	
38	264X	SWAMP CREEK	476	40	45	1950	1986	73RD AVE NE	INTERS. NE 192ND ST	SWAMP CREEK	Kenmore
39	264Z1	MCALDER CREEK	475	24	24	1949		SHORE DRIVE NE	.2 MI SE OFHW-522	MCALDER CREEK	Lake Forest Park
40	264Z2	MCALDER CREEK	475	24	24	1949		45TH AV NE	0.2 SE BOTHELL WAY	MCALDER CREEK	Lake Forest Park
41	264Z3	MCALDER CREEK	475	24	24	1949		BEACH DRIVE NE	0.1 SE BOTHELL WAY	MCALDER CREEK	Lake Forest Park
42	267X	CHERRY VALLEY TRESTLE	630	24	181	1951		315TH WY NE	.5 MI N CHERRY RD	CHERRY CREEK	
43	271AOX	TOKUL CREEK OX	600	38	100	1988		TOKUL ROAD	.7 MI NE OF HW-202	OLD MILWAUKEE RR BED	
44	271B	UPPER TOKUL CR	688	22.5	107	1965		TOKUL ROAD	1.5 MI NE OF HW-202	TOKUL CREEK	
45	333A	BEAR CREEK	507	22.8	20	1950		NE 133RD ST	.25 MI E BEAR CRK	BEAR CREEK	
46	344A	PATTERSON CREEK	599	22.8	20	1951		310TH AVE SE	.8 MI NE OF HW-202	PATTERSON CREEK	
47	344B	308TH AVE SE	599	22.8	16	1950		308TH AVE SE	.2 MI N OF HW-202	PATTERSON CREEK	
48	359A	GRANITE CREEK	173	14	30	1967		PRIVATE ROAD	6 MI. EA. NORTHBEND	GRANITE CREEK	
49	359B	LAKE DOROTHY BRIDGE	173	26	339	1963		SE LAKE DOROTHY RD	5.1 E 468 AVE	MIDDLE FORK SNOQUALMIE R	
50	359C	LAKE DOROTHY OVERFLOW BR	173	29	20	1963		SE LAKE DOROTHY RD	6 MI. EA. NORTHBEND	OVERFLOW	
51	359D	LAKE DOROTHY OVERFLOW	173	14	38	1962		SE LAKE DOROTHY RD	9 MI. EA. NORTHBEND	OVERFLOW	
52	364A	DEEP CREEK	163	18	109	1965		NORTH FORK RD SE	13.7 N N BEND	DEEP CREEK	
53	364B	WAGNERS BRIDGE	163	10	203	1977		NORTH FORK RD SE	13.5 N N BEND	N FORK SNOQUALMIE RIVER	
54	364C	SUNDAY CREEK	163	14	80	1962	1977	NORTH FORK RD SE	17.4 N N BEND	NORTH FORK SNOQUALMIE R.	

TABLE 1 - BRIDGE INVENTORY

			1998 Thomas page no.	Width	Length	Yr Built	Yr Rebt	Facilities Carried	Location	Features Intersected	Jurisdiction
55	368B	MAY CREEK TRESTLE	626	24	204	1951		COAL CK PKWY SE	.25 MI N SE 95TH WY	MAY CREEK	Newcastle
56	404B	NOVELTY BRIDGE	508	18.8	736	1920	1938	NE 124 ST.-NOVELTY	0.5 W OF SR 203	SNOQUALMIE RIVER	
57	422A	BEAVER LAKE TRESTLE	598	40	389	1968	1994	SE 24TH ST	.6 MI E 228 AVE SE	SLOUGH	Sammamish
58	427I	CHERRY CREEK BRIDGE	509	26	101	1960		NE CHERRY VLY RD	2.6 E OF HW203	CHERRY CREEK	
59	480A	BEAR CREEK	507	22.8	18	1951		NE 116TH ST	.1 MI E AVONDALE	BEAR CREEK	
60	493B	BANDARET	658	24.5	60	1952	1965	SE MAY VALLY RD	4 W ISSAQ- HOBART	ISSAQUAH CREEK	
61	493C	FIFTEEN MILE CREEK	658	26.9	38	1932	1973	SE MAY VALLEY RD	.2 W ISSAQ- HOBART	FIFTEEN MILE CREEK	
62	506A	MONEY CREEK BRIDGE	164	14	220	1958		NE MONEY CREEK RD.	2 MI SOUTH OF HWY 2	MONEY CREEK	
63	509A	BARING BRIDGE	483	8.3	340	1930	1952	NE INDEX CK RD	0.1 MI S OF HW-2	SKYKOMISH RIVER-S FORK	
64	578A	EVANS CREEK	537	22.8	20	1950		REDMOND-FALL CI RD	.5 MI W 204TH PL NE	EVANS CREEK	
65	593C	MAY CREEK	627	22.6	16	1951		164 AVE SE	.05 MI N OF HW-900	MAY CREEK	
66	615A	SMITH PARKER BRIDGE	599	34	125	1998		328 WAY SE	0.0 W FALL CITY RD	RAGING RIVER	
67	617B	EDGEWICK	661	19.5	186	1951		EDGEWICK ROAD	1.3 S OF INT 90	S. FK. SNOQUALMIE RIVER	
68	682A	PRESTON BRIDGE	629	20	260	1957		LOVEGREN RD.	.1 E OF PREST-FALL	RAGING RIVER	
69	891A	KIMBALL SUPER SPAN.	630	32	25	1971		384TH AVE SE	.4 N SE N.BEND WY	KIMBALL CREEK	
70	896A	ROCK CREEK BRIDGE	689	17	61	1994		SE 208TH ST	4.2 E ISSAQ-HOBART	ROCK CREEK	
71	896B	KERRISTAN BRIDGE	689	14	22	1996		208TH SE	6.8 MI E OF ISSA-HO	RAGING RIVER	
72	896C	KERRISTAN BRIDGE	689	14	32	1996		208TH SE	6.8 MI E OF ISSA-HO	RAGING RIVER	
73	909B	CLOUGH CK. (KIMBALL CK.)	660	22.8	16	1951		SE 141ST ST	1.6 S INT 90	CLOUGH CREEK	
74	916A	W SNOQUALMIE RIVER ROAD	569	22.8	20	1951		W SNOQUALMIE RI RD	.8 MI S NE TOLT RD	SLOUGH	
75	920A	RUTHERFORD SLOGH	599	22.8	20	1950		SE 39TH PL	.4 MI NE OF HW-203	RUTHERFORD SLOUGH	
76	927B	PATTERSON CREEK	599	12.8	21	1951	1973	300TH AVE SE	.1 MI S OF HW-202	PATTERSON CREEK	
77	952A	EVANS CREEK	537	22	23	1913		NE UNION HILL RD	1.3 E AVONDALE RD	EVANS CREEK	
78	952B	EVANS CREEK	537	22	32	1913		196TH AVE NE	.9 MI N OF HW-202	EVANS CREEK	
79	952C	E REDMOND	537	22	23	1913		196TH AVE NE	0.5 MI N OF HW-202	EVANS CREEK	
80	999K2	SCENIC BRIDGE	164	19	61	1960		COUNTY ROAD	0.1 S OF HW-2	TYE RIVER	
81	999W	MILLER RIVER BR	514	16.8	228	1922		CASCADE STEVENS HW	1.5 MI SE OF HW-2	MILLER RIVER	
82	999X	CASCADE SCENIC HWY	514	22.8	20	1950		CASCADE SCENIC HWY	1.3 MI SE OF HW-2	MILLER RIVER SLOUGH	
83	999Z	SKYKOMISH RIVER	514	24	255	1957		MONEY CREEK RD	.1 MI SE OF USHW-2	SKYKOMISH RIVER	
84	1000	TYE RIVER PED BRIDGE	164	6	80	1996		OLD CASCADE HWY	4 MI N OF HWY 2	TYE RIVER	
85	1008E	RAGING RIVER	629	24	70	1915		SE 68TH ST.	0.1 E FALL CITY RD	RAGING RIVER	
86	1008G	RAGING RIVER	629	28	169	1962		PRESTON FALL CITY	2 M NE OF I-90	RAGING RIVER	
87	1011A3	INGLEWOOD	567	34	63	1961		EAST LAKE SAMMAMIS	.5 N INGLEWOOD RD	OLD S	Sammamish
88	1023A	STOSSEL BRIDGE	539	24	330	1951		NE CARNATION FARM	.8 MI W OF HW-203	SNOQUALMIE RIVER	
89	1056B	BEAR CREEK	477	37	20	1915		WOODINVILLE-DUVALL	1.3 MI E AVONDALE	BEAR CREEK	
90	1071AE	EAST KENMORE BRIDGE	475	25.8	590	1970		JUANITA DRIVE	.2 S BOTHELL WAY	SAMMAMISH RIVER	Kenmore
91	1071AW	WEST KENMORE BRIDGE	475	25.8	590	1938		JUANITA DRIVE	0.2 S BOTHELL WAY	SAMMAMISH RIVER	Kenmore
92	1086A	KIMBALL CREEK	630	25	43	1929	1965	SE 80TH ST	.4 MI W OF SHW-202	KIMBALL CREEK	
93	1086B	COAL CREEK	630	22.8	16	1950		378TH AVE SE	.2 MI S SE80TH ST	COAL CREEK	
94	1116A	BRISSACK BRIDGE	660	26	266	1971		436TH AVE SE	.8 MI S OF I-90	S FK SNOQUALMIE	
95	1136A	DUVALL BRIDGE	508	24	1182	1951		WOODINVILLE-DUVALL	.1 MI W OF HW-203	SNOQUALMIE RIVER	1/2 Duvall
96	1136B	DUVALL SLOUGH	508	24	639	1948		WOODINVILLE DUVALL	.4 MI W OF HW-203	DUVALL SLOUGH	
97	1136C	WOODINVILLE-DUVALL RD.	508	24	90	1948		WOODINVILLE DUVALL	.6 MI W OF HW-203	DUVALL SLOUGH	
98	1136D	WOODINVILLE-DUVALL RD	508	24	70	1948		WOODINVILLE DUVALL	.8 MI W OF HW-203	DUVALL SLOUGH	
99	1136E	WOODINVILLE-DUVALL	508	24	50	1948		WOODINVILLE DUVALL	.9 MI W OF HW-203	DUVALL SLOUGH	
100	1239A	UPPER PRESTON	629	22.8	60	1950		UPPER PRESTON RD	1.8 MI SE OF I-90	ECHO LAKE CREEK	
101	1320A	AMES LAKE TRSL.	538	22.9	152	1924	1970	AMES LK CARNATION	.2 S OF W SNOQ.RD	AMES LAKE CREEK	
102	1384A	FIFTEEN MILE CR	658	24	64	1949		ISSAQUAH HOBART RD	.3 MI S MAY VALL SE	FIFTEEN MILE CREEK	
103	1384B	15 MILE CREEK	658	18.5	30	1969		240 AVE SE	0.2 N TIGER MT RD	15 MILE CREEK	
104	1726A	MEADOWBROOK BR	630	18.7	373	1921	1971	394 PL SE SNOQUAL.	.7 MI NE OF HW-202	SNOQUALMIE RIVER	1/2 Snoqualmie
105	1730A	BEAR CREEK	537	23	20	1951		NE 95TH ST.	0.3 E AVONDALE RD	BEAR CREEK	
106	1741A	ISSAQUAH CK	658	22.8	54	1951	1974	252 AVE SE ISSAQ.	0.1 S HOBART ROAD	ISSAQUAH CREEK	
107	1834A	TOLT BRIDGE	569	19.3	696	1922	1968	NE 32 ST-CARNATION	0.5 W SR 203	SNOQUALMIE RIVER	
108	2133A	SIKES LAKE TRESTLE	538	21.9	260	1978		284 AVE NE - TOLT	0.1 N AMES LAKE RD	OVER SIKES LAKE	

TABLE 1 - BRIDGE INVENTORY

			1998 Thomas page no.	Width	Length	Yr Built	Yr Rebt	Facilities Carried	Location	Features Intersected	Jurisdiction
109	2550A	MT. SI BRIDGE	660	19	290	1955	1960	MOUNT SI ROAD	.4 N OF SE N.BEND	MIDDLE FK SNOQUALMIE	
110	2605A	FOSS RIVER	164	14	120	1951		FOSS RIVER ROAD	0.8 SE SR2 MP 50.6	FOSS RIVER	
111	3005	HYLEBOS CREEK	774	22.8	16	1951		S 373RD ST	0.2 E PACIFIC HWY	HYLEBOS CREEK	Federal Way
112	3013	LEE HILL BRIDGE	746	48	219	1973		8TH STREET NE	4 MI E HARVEY RD	GREEN RIVER	1/2 Auburn
113	3014	NEELY BRIDGE	746	28	240	1970		AUBURN BLACK DIAMO	2 MI NE OF HW-18	GREEN RIVER	
114	3015	PATTON BRIDGE	776	24	430	1950		SE GREEN VALLEY RD	1.5 MI SE OF HW-18	GREEN RIVER	
115	3017	CIRCLE WATER BR	777	26	45	1926	1965	SE GREEN VALLEY RD	4.1 MI E OF HW-18	GREEN RIVER TRIBUTARY	
116	3020	GREEN VALLEY ROAD	777	22.8	20	1950		SE GREEN VALLEY RD	5.5 MI E OF HW-18	DRAINAGE DITCH	
117	3022	GREEN VALLEY ROAD	777	22.8	20	1954		SE GREEN VALLEY RD	6.7 MI E OF HW-18	DRAINAGE DITCH	
118	3024	FLAMING GEYSER	777	34.5	362	1991		228 PLACE SE	2 E GREEN VAL RD	GREEN RIVER	
119	3025	WHITNEY BRIDGE	777	38	250	1990		WHITNEY ROAD	1 S GREEN VAL RD	GREEN RIVER	
120	3027	WHITNEY HILL	777	26.8	24	1944	1958	218TH AVE SE	0.8 S GREEN VAL RD	NEWAUKUM CREEK	
121	3030	SE 380 ST	778	22.8	16	1950		SE 308TH ST	1 MI W OF SHW-169	SLOUGH	
122	3032	GREEN RIVER GORGE	748	14	437	1914	1991	FRANKLIN ROAD	4 MI E OF HW-169	GREEN RIVER	
123	3035A	COAL CREEK	779	17.8	49	1958		LAKE WALKER RD	1.5 SE VEAZIE-CUMB	COOL CREEK	
124	3036	KANASKAT ARCH	749	24	220	1918	1955	CUMBERLAND-KANASKE	0.1 S KANASKAT	GREEN RIVER	
125	3037OX	KANASKAT OXING	749	22.5	157	1959		CUMBERLAND-KANASKE	AT KANASKET KANGL	NORTHERN PACIFIC R.R.	
126	3038	VEAZIE BRIDGE	778	26	56	1950		VEAZIE-CUMBERLAND	0.3 N SE 392 ST	COAL CREEK	
127	3040A	NEWAUKUM CREEK	808	26.8	20	1959		284TH AVE SE	.3 MI N OF SE416TH	NEWAUKUM CREEK	
128	3041	NEWAUKUM CREEK	808	27.7	70	1958		SE 416TH ST	.9 MI E OF HW-169	NEWAUKUM CREEK	
129	3042	NEWAUKUM CREEK	808	28	16	1926	1969	SE 416TH ST	.8 MI E OF HW-169	NEWAUKUM CREEK	
130	3043	NEWAUKUM CREEK	808	28	16	1925	1969	SE 416TH ST	.6 MI E OF HW-169	NEWAUKUM CREEK	
131	3049	284 AVE SE BRIDGE	838	22.8	20	1950		284TH AVE SE	.5 S OF SE 456TH ST	BOISE CREEK	
132	3050A	GREENWATER RIVER BRIDGE	841	19	19	1964	1996	SE 496TH PL	.3 MI NE OF SHW-410	PACKARD CREEK	
133	3050B	GREENWATER	841	11	110	1973		TWO COUNTY ROAD	2 MI NE OF SHW-410	GREENWATER RIVER	1/2 Pierce County
134	3051	BOISE CREEK	838	18	16	1927		276TH AVE SE	.3 MI S WARNER AVE	BOISE CREEK	
135	3052	BOISE CREEK	838	24	19	1927	1959	268TH AVE SE	2 MI S WARNER AVE	BOISE CREEK	
136	3055A	BOISE X CONNECTION	838	21	37	1956		244TH AVE SE	2.0 S ENUMCLAW	BOISE CREEK	
137	3056A	SE 408TH ST	807	28	16	1927		SE 408TH ST	.2 MI E OF SHW-164	DRAINAGE DITCH	
138	3060	208TH AVE SE	807	26.8	16	1951		208TH AVE SE	INTSECT. SE 448TH ST	DRAINAGE DITCH	
139	3063	NEWAUKUM CREEK	808	22.8	40	1950		SE 416TH ST	.6 MI W SE 416TH ST	NEWAUKUM CREEK	
140	3064	NEWAUKUM CREEK	808	26.5	47	1928	1997	SE 424TH ST	.8 MI W OF 244TH SE	NEWAUKUM CREEK	
141	3066	NEWAUKUM CREEK	808	28	49	1927	1955	236TH AVE SE	.5 MI N OF SHW-164	NEWAUKUM CREEK	
142	3068	NEWAUKUM CREEK	808	21.6	32	1928		244TH AVE SE	.2 MI N OF SE 436TH	NEWAUKUM CREEK	
143	3069	NEWAUKUM CREEK	808	26	24	1939	1956	248 TH AVE SE	INTERS. SE 433RD ST	NEWAUKUM CREEK	
144	3071	NEWAUKUM CREEK	808	24	40	1950		SE 424TH ST	.5 MI W OF HW-169	NEWAUKUM CREEK	
145	3075	LANDSBURG BR.	718	38	130	1982		LANDSBURG ROAD	1.5 N KENT KANGL RD	CEDAR RIVER	
146	3082	COVINGTON CREEK	747	24	19	1915		AUBURN-BLACKDIAMON	.3 N OF SE LK. HOLM	COVINGTON CREEK	
147	3084	COVINGTON CREEK	747	24	20	1915		AUBURN-BLACKDIAMON	INTERS. SE322ND ST	COVINGTON CREEK	
148	3085	COVINGTON	717	24	45	1929		COVINGTON-SAWYER R	.7 MI SE OF SHW-516	JENKINS CREEK	
149	3085P	COVINGTON WAY PED BRIDGE	717	8	65	1998		PEDESTRIAN PATHWAY	350' SE OF WAX ROAD	JENKINS CREEK	
150	3086OX	BERRYDALE OX	747	24	105	1931	1968	KENT-BLACKDIAMOND	AT SE 291ST	BURLINGTON NORTHERN RR	
151	3087	BIG SOOS CREEK	747	24	36	1931		KENT-BLACKDIAMOND	AT SE 288TH ST	BIG SOOS CREEK	
152	3092	L WILDERNESS OX	717	38	24	1996		WITTE ROAD	.5 MI E OF HWY-169	PARK TRAIL	
153	3094OX	GRAVEL PIT OX	717	19	79	1988		SE 231ST ST	1 MI E OF SHW-169	ABANDONED RR GRADE	
154	3096OX	MAPLEVALLEY OVERCROSSING	688	42	24	1994		SE 216TH WAY	.05 MI E OF HW-169	KING COUNTY PARK TRAIL	
155	3097	DORRE DON WAY	688	22.8	20	1945	1959	DORRE DON WAY	1 MI SE OF SHW-169	DRAINAGE DITCH	
156	3099	MAXWELL ROAD	687	22.8	20	1939	1951	225TH AVE SE	.5 MI NE OF SHW-169	GEM CREEK	
157	3099A	GEM CREEK	687	25	22	1989		SE 206TH STREET	.5 MI EAST OF SR169	GEM CREEK	
160	3106	SOOS CREEK	716	20.3	17	1938		SE 244TH ST	1 W OF 148TH AVE	SOOS CREEK	
161	3108	SOOS CREEK	716	33	25	1971		148TH AVE SE	.2 MI N OF SE240TH	SOOS CREEK	
162	3109	SOOS CREEK	686	22.8	16	1949		SE 224TH ST	.3 MI E 132ND AVE	SOOS CREEK	
163	3109A	SOOS CREEK	686	18.6	15	1959		SE 216TH ST	.3MI E 132ND AVE SE	SOOS CREEK	
164	3109B	LK. YOUNGS' WAY	686	38.8	16	1969		SE LK YOUNGS WAY	.3 NE OF SE 208TH	SOOS CREEK	

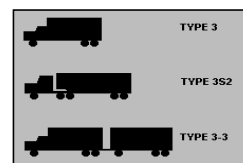
TABLE 1 - BRIDGE INVENTORY

	Br No	Br Name	1998 Thomas page no.	Width	Length	Yr Built	Yr Rebt	Facilities Carried	Location	Features Intersected	Jurisdiction
165	3110	SOOS CREEK	686	20	15	1928		SE 208TH ST	.3 MI E OF SE204TH	SOOS CREEK	
166	3126	SE 277TH ST	715	62.8	16	1950	1973	SE 277TH ST	1.5 MI E OF I-5	SLOUGH	
167	3130	ALVORD "T"	715	18	275	1914	1970	S 3RD AVE KENT	.3 MI E OF SHW-167	GREEN RIVER	
168	3139	SALTWATER STATE PARK	715	24	570	1934		MARINE VIEW DR.	2.6MI NW JCT SR 99	SALTWATER STATE PARK	DesMoines
169	3143	SOUTH TWIN	715	24	375	1951	1996	16TH PL S	1.5 MI N OF HW-99	DRAINAGE DITCH	DesMoines
170	3145A	MILLER CREEK	655	38	20	1969		S 156TH WY	AT 9TH AVE S	MILLER CREEK	Seatac
171	3164	CEDAR GROVE	687	26	180	1962		CEDAR GROVE RD	.2 MI NE OF HW-169	CEDAR RIVER	
172	3165	CEDAR MOUNTAIN	657	26	320	1950		SE JONES RD	.05 MI E OF HW-169	CEDAR RIVER -MILWAUKEE R	
173	3165A	CEDAR MT. RAMP	657	11	166	1951	1965	SE JONES RD RAMP	.05 MI E OF SHW-169	RAMP	
174	3166	ELLIOTT BRIDGE	656	18.7	278	1951		JONES ROAD	.2 MI N OF HW-169	CEDAR RIVER	
175	3176	PETER WESTERN	654	24	181	1950		S 116TH ST	.3 MI W OF HW-99	DRAINAGE DITCH-RELIEF	
176	3176A	PUGET S. HS OX	625	5.5	326	1959	1996	PEDESTRIAN OX	1ST AVE S & SW 126	HWY 509	
177	3179	14 AVE S BRIDGE (DUWAMISH)	625	40	1285	1931		14/16TH AVE S	.8 MI N OF SHW-99	DUWAMISH RIVER	1/2 Tukwila
178	3184	JUDD CREEK	683	24	370	1953		VASHON HWY SW	.1 MI S QUARTERMAST	JUDD CREEK	
179	3188	NEWAUKUM CREEK	777	30	24	1927		SE 400TH ST	1 MI E 212TH AVE SE	NEWAUKUM CREEK	
180	3194	WYNACO	747	20	195	1964		168TH WAY SE	AT AUB. BLACK DIA.	COVINGTON CREEK	
181	3198	SEMANSKI	838	28	37	1963		252ND AVE SE	.1 MI S OF SHW-410	BOISE CREEK	
182	3201	SE 424TH ST	808	22.8	16	1951		SE 424TH ST	.6MI W 284TH AVE SE	WATERCRESS CREEK	
183	3202	MAXWELL ROAD	687	22.8	16	1952		225TH AVE SE	.6 MI N OF SHW-169	CATTLE UX	
184	3205	SOOS CREEK	717	22.8	16	1951		172ND AVE SE	.2 MI N OF SE240TH	SOOS CREEK	
185	3216	GREEN RIVER	716	48	250	1990		83RD AVE S.	ON S CENTRAL AV-KEN	GREEN RIVER	1/2 Kent
186	3217	OVERFLOW CHANNEL	716	48	62	1990		83RD AVE S.	ON CENTRAL AVE-KENT	CATTLE CROSSING	
187	3218	N. FORK OF ISSAQUAH CK.	628	34	25	1973		SE 66TH ST	.2 MI N OF I-90	JORDAN CREEK	
188	3219OX	VAUGHN HILL	628	44	37	1985		230TH AVE SE	.2 MI NE OF I-90	GRAVEL PIT UX CONNECTOR	
189	3220	BLACK NUGGET BRIDGE	598	38	32	1992		BLACK NUGGET ROAD	.2 N ISSAQ.-FALL RD	N. FORK ISSAQUAH CREEK	
190	5003	HARRIS CREEK	539	23	66	1947	1967	KELLY RD NE	2 MI NE OF HW-203	HARRIS CREEK	
191	5005	MAY CREEK	627	22.8	16	1950		SE MAY VALLEY RD	.1 MI E OF HW-900	MAY CREEK	
192	5007	KELLY ROAD	509	22.8	16	1959		KELLY RD NE	1 MI N OF NE LK JOY	DRAINAGE DITCH	
193	5008	KELLY RD CHERRY CREEK	509	26.8	70	1947	1966	NE CHERRY VALLEY R	3 MI N OF NE LK JOY	CHERRY CREEK	
194	5009B	SNOQUALMIE VALLEY RD	538	22.8	16	1951		W SNOQUALMIE VLY R	.5MI N AMES LK. RD	DRAINAGE DITCH	
195	5011	SHULTS	537	15	27	1953		NE 106TH ST	.1MI E AVONDALE RD	BEAR CREEK	
196	5015	LOWER SWAMP CR.	476	22.8	47	1951		NE 175TH ST	1 MI W OF HW-522	SWAMP CREEK	Kenmore
197	5017	HAMLIN ROAD BRIDGE	479	21	16	1949		HAMLIN ROAD NE	.1 MI NE HWY 522	MCALEER CK	Lake Forest Park
198	5024	CARNATION FARM ROAD	568	34	60	1997		NE CARNATION FARM	.6 MI W OF HW-203	SLOUGH	
199	5024A	PATTERSON CK	539	18	18	1938	1971	264TH AVE SE	.1 MI S OF SHW-202	PATTERSON CREEK	
200	5028	CARNATION FARM RD SLOUGH	539	34	40	1998		NE CARNATION FARM	0.2 MI W OF HW-203	SLOUGH	
201	5032	STOSSEL CREEK	163	16	30	1947	1967	STOSSEL CK RD	6.2 NE KELLY RD	STOSSEL CREEK	
202	5034A	LAKE JOY BRIDGE	539	22.8	16	1950		346TH PL NE	ON NE LAKE JOY RD.	LAKE JOY CREEK	
203	5042	COTTAGE LAKE CREEK	507	35	35	1975		NE 130TH ST.	.1 MI W AVONDALE RD	COTTAGE LAKE CREEK	
204	5043	OLD NORTH BEND WAY	630	52	92	1941		NORTH BEND WAY	.4MI SE OF MEADOWBR	KIMBALL CREEK	
205	5044	4 CK RANCH	658	28	42	1983		229 DRIVE SE	.5 S OF SEMAY VL RD	ISSAQUAH CREEK	
206	5045	MC DONALD HIGHLAND	505	7.8	90	1982		SCHOOL PED. O.X.	.1 W OF JUAN. DR NE	N.E. 151 ST.	Kenmore
207	5046	PRESTON FRONTAGE ROAD	629	28	316	1974		UPPER PRESTON ROAD	.1 MI SE OF I-90	RAGING RIVER	
208	5047	MEADOWBROOK POINTE	597	28	40	1986		187 AVE S E	0.7 MI N OF I-90	LEWIS CREEK	
209	5070	CAMP SAMBICA PED OX	597	5	38	1950	1984	PED WALKWAY	ISSAQUAH	WEST LAKE SAMMAMISH (SR901)	
210	6001	FORT DENT PARK BRIDGE	655	26	202	1975		PARK ENTRANCE ROAD	IN FORT DENT PARK	GREEN RIVER	King County Park
211	6002	MARYMOOR PARK BRIDGE	537	26	115	1963		PARK ENTRANCE ROAD	IN MARYMOOR PARK	SAMMAMISH SLOUGH	King County Park

TABLE 2 - UBIT and FRACTURE-CRITICAL BRIDGES

				1998		1999 Plan	
	BRNO	BR NAME	INSP TYPE	CITY	WSDOT	CITY	WSDOT
1	234A	RAGING RIVER	UBIT			X	
2	122I	NORTH FORK	UBIT			X	
3	3024	FLAMING GEYSER	FC			X	
4	3032	GREEN RIVER GORGE	UBIT			X	
5	3050B	GREENWATER	FC			X	
6	3139	SALTWATER STATE PARK	UBIT			X	
7	3179	14 AVE S BRIDGE (DUWAMISH)	UBIT			X	
8	3194	WYNACO	UBIT			X	
9	359B	LAKE DOROTHY BRIDGE	UBIT			X	
10	615A	SMITH PARKER BR	UBIT			X	
11	368B	MAY CREEK TRESTLE	UBIT				X
12	5046	PRESTON FRONTAGE ROAD	UBIT				X
13	1023A	STOSSEL BRIDGE	UBIT				X
14	1726A	MEADOWBROOK BR	UBIT				X
15	1834A	TOLT BRIDGE	UBIT				X
16	3014	NEELY BRIDGE	UBIT				X
17	3037OX	KANASKAT OXING	UBIT				X
18	3130	ALVORD "T"	UBIT				X
19	682A	PRESTON BRIDGE	FC				X
20	3036	KANASKAT ARCH	UBIT	x			
21	3184	JUDD CREEK	UBIT	x			
22	999W	MILLER RIVER BR	UBIT	x			
23	999Z	SKYKOMISH RIVER	UBIT	x			
24	1071AE	EAST KENMORE BRIDGE	UBIT	x			
25	1071AW	WEST KENMORE BRIDGE	UBIT	x			
26	3143	SOUTH TWIN	UBIT	x			
27	1136A	DUVALL BRIDGE	UBIT	x			
28	3015	PATTON BRIDGE	FC	x			
29	3166	ELLIOTT BRIDGE	UBIT		x		
30	617B	EDGEWICK	UBIT		x		
31	1116A	BRISSACK BRIDGE	UBIT				
32	225C	YORK BRIDGE	UBIT		x		
33	2550A	MT. SI BRIDGE	FC		x		
34	2605A	FOSS RIVER	FC				
35	3025	WHITNEY BRIDGE	UBIT				
36	3075	LANDSBURG BR.	UBIT				
37	3164	CEDAR GROVE	UBIT				
38	3165	CEDAR MOUNTAIN	FC		x		
39	3216	GREEN RIVER	UBIT				
40	404B	NOVELTY BRIDGE	FC		x		
41	122K	NORMAN BRIDGE	UBIT				

TABLE 3 - LOAD-LIMITED BRIDGES



	BR NO	Name	Location	Type 3: 3 Axle truck	Type 3S2: 5 Axle truck	Type 3-3: 6 Axle truck	Detour Route	VERT. CL FT
1	61G	TOKUL CREEK	Fish Hatchery Rd. & about SE 56th st., east of Fall City.	18T	24T	32T	None	
2	225C	YORK BRIDGE	NE 116th st. - across Sammamish River, just N of Redmond.	16T	23T	28T	Use 124 th St	
3	257Z	HORSESHOE LAKE CREEK	310 Ave NE, about 1/2 mile N of NE Carnation Farm Rd. N of Carnation	20T	32T	39T	None	
4	364B	WAGNERS BRIDGE	Fury Lake Rd., ten miles NE of North Bend, over N Fork Snoqualmie River.	11T	14T	16T	None	
5	404B	NOVELTY BRIDGE	NE 124 st. over the Snoqualmie River. 1/2 mile E of Snoqualmie Valley Rd.	17T	26T	32T	Use Woodinville Duvall Rd	15.75
6	509A	BARING BRIDGE	Jas. Fitzgerald Rd. ,Over S Fork of Skykomish River, 1/2 mile SE of Baring	10T	10T	10T	None	
7	617B	EDGEWICK	468 Ave. SE at about SE 157 St. 3/4 mile S of I-5, east of North Bend.	18T	28T	34T	None	14.25
8	682A	PRESTON BRIDGE	Lovegren Rd. about SE 86 st. over Raging River - At Preston	21T		40T	Use Upper Preston Road	
9	999W	MILLER RIVER BR	At Miller, E of Skykomish, over Miller River.	23T			Use Stevens Pass Way	13.5
10	1726A	MEADOWBROOK BR	Meadowbrook Ave at SE Reinig Rd. On N city limits of Snoqualmie, over Snoq. Riv.	16T	26T	32T	Use Reinig Rd via 428th Ave	14
11	1834A	TOLT BRIDGE	NE Tolt Hill Rd., over Snoqualmie River, 1/2 mile west of Carnation	17T	27T	34T	Carnation to Fall City - Redmond Rd	14.5
12	2550A	MT. SI BRIDGE	Mount Si Rd., over the Middle Fork of the Snoqualmie River, 1/2 mile E of North Bend	16T	26T	32T	None	15
13	3130	ALVORD "T"	S 3 Ave at about S 259 St, over Green River. S of Kent on	20T	30T	40T	Use Central Ave and 52nd St.	13.67
14	3165A	CEDAR MT. RAMP	Jones Rd at about SE 160 St. N of Cedar Mountain on	10T	20T		None	
15	3166	ELLIOTT BRIDGE	Jones Rd at about 149 Ave SE, over Cedar River - E of Maplewood	18T	22T	23T	Use Maple Valley Hwy	14
16	5003	HARRIS CREEK	Kelly Rd NE about 1/4 mile N of NE Big Rock Rd, over Harris Ck. N of Stillwater on	20T	31T	40T	Use Carn- Duvall to NE Big Rock Road	
17	5008	KELLY RD CHERRY CREEK	NE Cherry Valley Rd. at 318 Wy NE - E of Duvall	21T		40T	Use Carn- Duvall to NE Big Rock Road	

TABLE 4 - REPLACEMENT/ REHAB PRIORITY RESULTS and CIP PROJECT STATUS

	BR NO	BR NAME	RATING SCORE	CIP NO	PROJ START	CONST YEAR	REMARK/SCOPE
1	3166	ELLIOTT BRIDGE	85.72	401288	1985	1998	Replacement (Federal funds)
2	404B	NOVELTY BRIDGE	80.17	200193	1994	2000	Replacement (Federal funds)
3	1726A	MEADOWBROOK BR	70.03	200294	1995	2001	Rehabilitation (Federal funds)
4	1834A	TOLT BRIDGE	68.07	200394	1995	2001	Replacement (R/W \$300,000)
5	2550A	MT. SI BRIDGE	63.19	200994	1999	2001	Replacement study
6	617B	EDGEWICK	60.42	200498	1999	2004	Replacement needs/scoping -C3R study:include painting and seismic.
7	3179	14 AVE S BRIDGE (DUWAMISH)	54.56	300197	1998		Replacement study(not funded)
	3179	14 AVE S BRIDGE (DUWAMISH)	54.56	300988	1990		Study / Repair (on going)
8	999W	MILLER RIVER BR	52.14	200595	1995	1997	Major repairs done in 1997, Included painting but not seismic
9	509A	BARING BRIDGE	50.89				Upgraded capacity to 10 Tons in 1995. No major rehab planned.
10	3130	ALVORD "T"	49.69	500195	1995	1997	Maintanance Agreement with Kent
11	364B	WAGNERS BRIDGE	46.87		2000		New CIP project recommended
12	3165	CEDAR MOUNTAIN	45.61	400395	1995	2000	Replacement together with 3165A; (Federal funds)
13	124C	NE 124 ST	44.37	101997	1997	2001	Replacement (not included); Level 1 Seismic retrofit in 1999 as part of NE124th Street widening project
14	225C	YORK BRIDGE	43.41	100298	1999	2003	Replacement-Negotiate agreement with Redmond
15	682A	PRESTON BRIDGE	42.60	200397	1998		C3R Feasibility study
16	3086OX	BERRYDALE OX	42.29		2001		New CIP project recommended
17	5008	KELLY RD CHERRY CREEK	41.77	200600	2001	2003	Replacement
18	3027	WHITNEY HILL	41.29	401494	1994	1999	Replacement (Federal funds)
19	3165A	CEDAR MT. RAMP	40.54	400395	1995	2000	Replacement (Federal funds) (Part of 3165)
20	257Z	HORSESHOE LAKE CREEK	40.38		2000	2001	Review as part of the seismic retrofit program
21	61G	TOKUL CR PARK	38.83	200197	1998	2001	Feasibility study to determine if the replacement is necessary;includes load upgrade and seismic
22	180L	PATTERSON CREEK	38.23				
23	1136A	DUVALL BRIDGE	38.00				
24	480A	BEAR CREEK	36.87				
25	3106	SOOS CREEK	36.12	500399	2001	2002	Replacement (PE and PS&E, construction)
26	578A	EVANS CREEK	35.13				
27	1136B	DUVALL SLOUGH	33.35				
28	122N	TATE CREEK	33.19				
29	5005	MAY CREEK	32.83				
30	1136C	WOODINVILLE-DUVALL RD.	32.69				
31	1136E	WOODINVILLE-DUVALL	31.39				
32	3013	LEE HILL BRIDGE	31.21				
33	180A	EVANS CREEK	30.60				
34	186J	FIRE STATION	30.34				
35	1136D	WOODINVILLE-DUVALL RD	30.03				

TABLE 5 - BRIDGE SEISMIC RETROFIT PROJECTS

Br. No.	Name	Design Start	Construction schedule
Design and construction activities in 1998-1999			
1116A	Brissack Bridge	1996	1998 (Completed)
267X	Cherry Valley Trestle	1997	1998 (Completed)
427I	Cherry Valley	1997	1998 (Completed)
506A	Money Creek	1997	1998 (Completed)
264X	Swamp Creek	1997	1998 (Completed)
1741A	Issaquah Creek	1997	1998 (Completed)
3071	Newaukum Creek	1997	1998 (Completed)
5005	May Creek	1997	1998 (Completed)
3109	Soos Creek	1997	Not accessible due to high water - To be re-evaluated
3055A	Boise X Connection	1997	1998 (Completed)
3017	Circle Water	1997	1998 (Completed)
5015	Lower Swamp Creek	1997	1998 (Completed)
5032	Stossel Creek	1997	1998 (Completed)
3108	Soos Creek	1998	1998-99
3097	Dorre Don Way	1998	1998-99
359A	Granite Creek	1998	1998-99
228D	West Snoqualmie Road	1998	1998-99
5044	4 Creek Ranch	1998	1998-99
5009B	Snoqualmie Valley Road	1998	1998-99
1384B	15 Mile Creek	1998	1998-99
3069	Newaukum Creek	1998	1998-99
3035A	Coal Creek Bridge	1998	1998-99
1730A	Bear Creek	1998	1998-99
3036	Kanaskat Arch	1998	1999
3037OX	Kanaskat Oxing	1999	1999-00
5043	Old North Bend Way	1999	2000
5046	Preston Frontage Road	1999	2000
3194	Wynaco	1999	2000-01
5011	Walter Shults	1999	2000-01
2133A	Sikes Lake Trestle	1999	2000-01
359B	Lake Dorothy	1999	2000-01
1384A	Fifteen Mile Creek	1999	2000-01

TABLE 6 - PAINTING SCHEDULE

	BR. NO.	BRIDGE NAME	PAINTING SCHEDULE
1	682A	PRESTON BRIDGE	1994
2	1023A	STOSSEL BRIDGE	1994
3	1384B	15 MILE CREEK	1994
4	2605A	FOSS RIVER	1994
5	3055A	BOISE X CONNECTION	1995
6	3035A	COAL CREEK	1995
7	364A	DEEP CREEK	1995
8	3015	PATTEN BRIDGE	1996
9	122I	NORTH FORK	1996
10	999Z	SKYKOMISH	1996
11	3014	NEELY BR.	1996
12	3050B	GREEN WATER	1997
13	999K2	SCENIC BRIDGE	1997
14	3032	GREEN RIVER GORGE	2000
15	3216	GREEN RIVER BRIDGE	2000
16	999W	MILLER RIVER BRIDGE	1997
17	615A	SMITH PARKER BRIDGE	1998
18	404B	NOVELTY BRIDGE	Replacement scheduled
19	617B	EDGEWICK	C3R study
20	1834A	TOLT BRIDGE	Replacement scheduled
21	3166	ELLIOTT BRIDGE	Replacement scheduled
22	1726A	MEADOWBROOK BRIDGE	Rehabilitation scheduled
23	2550A	MT. SI BRIDGE	Replacement candidate
24	3165	CEDAR MT. BRIDGE	Replacement scheduled
25	3130	ALVORD "T"	5 year agreement with the city of Kent to maintain the structure in the existing condition.
26	3179	14/16TH AVE S. BRIDGE	